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## **High Performance Two-dimensional Semiconductors established by using a Benzyl Viologen Interlayer**

### **Abstract**

Electrical performance of two-dimensional (2D) semiconductor devices are limited by the properties of the electrical contact between the electrode and the semiconductor surface, requiring good Ohmic contact<sup>[1][2]</sup>. Solution processed polymeric contacts have been widely used in organic semiconductors, but not in 2D semiconductors until now. We demonstrated the fabrication of solution-processed polymeric contacts for the preparation of high mobility MoS<sub>2</sub>, MoTe<sub>2</sub>, and BP (black phosphorous) FETs with significantly lowered contact resistance. Ohmic contacts were achieved and produced 4-, 16-, and 13-fold increases in the effective mobilities, respectively, compared to the respective materials alone. Our devices exhibit excellent stability in both ambient and vacuum. Our strategy provides a promising method for obtaining Ohmic-contact 2D semiconductor devices as well as 2D logical integrated circuits.

### **References**

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